AMERICAN
GAS JOURNAL
Established 1859 Pioneer of the Gas Industry

VOL. 122, NO. 12
WHOLE NO. 3812

NEW YORK, SATURDAY, MARCH 21, 1925

Subscription, $8 Per Year
$4 Canada $5 Foreign

IRON HYDROXIDE COMPANY

Puryifying Materials of Quality

For Twenty Years

Using our Purifying Material will eleminate customers complaints from excessive sulphur

We Guarantee Results!

A line from you will bring a generous sample

Ask--You will never regret it

IRON HYDROXIDE COMPANY

Paschall Station - - - Philadelphia

Index to Contents, Page 3

Advertising Index, Page 55

HIGH GRADE INSTRUMENTS

for the

GAS INDUSTRY

SPECIAL ANNOUNCEMENT

AUTHORIZED AGENTS

in the

UNITED STATES

for

ALEXANDER WRIGHT & COMPANY, LTD.

SIMMANCE PATENTS.

GRAVITOMETER.

COMBUSTION RECORDER.

CHARTS.

SUPPLIES.

REPAIRS.

331—1

Precision Single and Multiple Dead Beat Draft Gauges, Indicating and Recording.

PRECISION THERMOMETER & INSTRUMENT CO.

143 Brandywine St. **Philadelphia, Pa.**

BRANCH OFFICES:

Baltimore: Builders' Exchange
Birmingham, Ala.: Haralson Sales Co., Inc.
Boston, Mass.; 136 Federal Street.
Chicago: 565 W. Washington Blvd.
Cleveland: Leader News Bldg.
Los Angeles, Cal.: 639 So. San Pedro St.
Montreal, Canada: 179 Delorimier Ave.
New York: 30 Church St.
Tampa, Fla.: 314 Citizens' Bank Bldg.
West Hartford, Conn.: 40 Robin Rd.
Rochester: 943 Granite Bldg.
St. Louis: 3324 S. Jefferson Ave.
San Francisco: 15 Spear
Los Angeles: 639 S. San Pedro St.

GLOVER-WEST
Vertical Retorts

AMERICAN INSTALLATIONS

Fitchburg, Mass.
Springfield, Mass.
Pawtucket, R. I.
Portland, Me.
Ottawa, Que.
Montreal, Que.
Fitchburg, Mass. (Repeat)
Pernambuco, Brazil
Santos, Brazil
Montreal, Que. (Repeat)
Vancouver, B. C.
Victoria, B. C.
Montreal, Que. (2nd Repeat)
Watertown, N. Y.
Malden, Mass.
Vancouver, B.C. (Repeat)
Toronto, Ont.
Medford, Ore.
Portland, Me. (Repeat)

COMBINED DAILY CAPACITY, 28,000,000 CU. FT.

The Glover-West System Gets the Most Out of the Coal

WEST GAS IMPROVEMENT CO.
of America, Inc.
150 Nassau St. New York

American Gas Journal

SIXTY-SIXTH YEAR

Published Weekly by American Gas Light Journal, Inc., 53 Park Place, New York, N. Y.

S. G. KRAKE, Pres. & Treas. C. S. MYERS, Vice-Pres. A. M. GLEASON, Sec'y.

STANTON G. KRAKE, Managing Editor ISMAR GINSBERG, Editor

"MEMBER OF THE AUDIT BUREAU OF CIRC ULATIONS"

Contents of This Issue

Conserving Assets—By F. Victor Westermaier 245
The Inert Matter in Gas—By Dr. W. Bertelsmann 246
Ideas for the Man Who Sells—By William H. Matlack 248
As The Journal Views It 249
The "Own Your Own Home" Movement
Burning Coal Wastes More Than Fuel
Knowledge Is Power—By J. B. Dillon 250
Industrial Lesson No. 62 251
Advertising Suggestions on Selling Gas Appliances 252
By Frank V. Faulhaber
Progress in Gas Technology 253
Catechism of Central Station Gas Engineering—62nd Installment 255
Market Report 261
News of the Gas Industry 262

Subscription $3.00 per year, including postage, in the United States, Mexico, Cuba, Porto Rico, Hawaii or the Philippines; in Canada, $4.00; foreign, $5.00—Single Copies, 10 cents.

AMERICAN GAS JOURNAL, March 21, 1925. Vol. 122. No. 12.
Published weekly by American Gas Light Journal, Inc., New York, N. Y.
Entered as second-class matter Jan. 9, 1917, at the post-office at New York, N. Y., under the Act of March 3, 1879.

AMERICAN
GAS JOURNAL

Vol. 122. No. 12 NEW YORK, MARCH 21, 1925 Whole No. 3512

Conserving Assets

Street lighting an important gas asset, must be kept intact

F. Victor Westermair

HOW many of the reported assets are earning the dividends?

Does this question not come to mind when balance sheets are opened to show the financial standing of a business, or, especially, of a Public Utility? And for those assets which are known to be direct income producers, what is being done to continue them as such?

Strange as it may seem, the real assets of a business are never disclosed in the balance sheet. The real assets are the intangibles, that is, those that are without financial appraisement, the personnel and the character and nature of the service rendered.

The Intangible Assets

Let us take, for example, an enterprse built up through years of experience to the point where its assets—consisting of real estate, machinery and tools, bills and accounts receivable, and cash—directly balance the liabilities—consisting of capital stock and surplus. This business is suddenly stricken by the loss of its personnel or the need for its service. How much would those assets then bring to satisfy the claims of the liabilities?

An enterprise lives and progresses, not by the acquisition of tangible assets alone, but by the degree of service that such assets can be made to produce. The world has always been, and will continue to be, ready to pay the price of service, but it will not maintain assets that do not render service.

This brings us to the text of our story.

The Gas Industry's Assets

For many years the gas industry has enjoyed the fruits of serving the public with the means for lighting, cooking and heating. It has had the cooperation of those outside of the industry in the development of appliances for the utilization of its product, and as a result has built up balance sheet assets of tremendous value for the continuation of that service. It is to the interest of all—those in the industry as well as those associated with it—that these assets continue to be valuable.

In all frankness, we must concede that one of the fields of service, that of lighting, is not continuing; at one time representing over 50 per cent in volume of business—today probably less than one-half of that proportion. In former years, lighting and cooking were the features of the yearly conventions; last year lighting was conspicuous by its absence.

Street Lighting

Only one branch of the lighting field still survives with some semblance of its former power. That is street lighting.

This field of essentially public service represents an annual gas consumption of more than two and one-half million thousand cubic feet, and a going asset value of approximately nine million dollars. Here is a concrete example of a business that for the gas industry has always earned returns on asset values, thereby stabilizing values which would be absolutely lost by the discontinuance of service.

Street Lighting an Important Asset

If this service is not to continue, then gas companies must stand to lose, not only their portion of the assets involved, the amount of business these assets have earned, but, in addition, whatever capital is required to replace that business along other lines of assured continued service.

Last April at the Eastern States Gas Conference, held in Philadelphia, it was clearly brought to the attention of the gas company representatives that

immediate steps must be taken to secure more new business. New business can only be secured through the expenditure of earnest efforts and money.

At that meeting it was brought out that "Good Service" was the best Gas Utility asset.

A "Needed" Service

Street lighting with gas has prevailed because its service qualities have been recognized and appreciated by the public; the renewal of the street lighting contract in Boston last year, for 10,000 lamps and for a period of ten years, is evidence of this fact. It also demonstrates that street lighting is a "needed" service.

Public opinion is of inestimable value to any public utility, and as it is most generally formed by the visible evidences of service it is logical that the surrender of street lighting would remove from public attention a service that has made itself a part of the life of all communities and, therefore, a connecting bond between gas companies and their customers in general.

To those who are interested in this service there is no reason for surrender; to the contrary, there are, even now, opportunities to advance, but just by holding what now prevails this bond will continue and nine millions of dollars worth of assets will be conserved to the industry for the general good of all.

CONSERVE YOUR ASSETS — SAVE YOUR STREET LIGHTING!

The Inert Matter In Gas

Its effect on the usefulness of gas

Dr. W. Bertelsmann

(This is the subject of a study made by German gas engineers and published in the Das Gas und Wasserfach. The original articles are of considerable length and this translation is merely an abstract of these articles and the information that they contain relating to the effect of inerts in gas on its use as a heating medium. Considerable data is also given in these articles on the relationship between the luminosity of the gas flame and the inert matter that it contains. There are in all three articles, the original one by Dr. Wilhelm Bertelsmann, who is the Government chemist for the city of Berlin, another by Dr. Emil Ott of Zurich and the answer to Dr. Ott's article by Dr. Bertelsmann.

This subject is one of importance to all gas men. The point in question is shall the gas be made with a high calorific power and are there any important advantages to be gained from such a gas? This is a question which is concerning the gas men of this country as well as those on the other side of the water. What effect is there, if any, of the inert matter, that is contained in the gas and whose presence therein reduces its calorific power, on the usefulness of the gas as heating medium? The results that were obtained from this German study are well worth reading.—Trans.)

DURING the war Germany used gas that was made from a variety of low grade combustibles, such as brown coal, peat, wood and the like. Before the war the gas used in that country was either straight coal gas or a mixture of the latter and carburetted water gas. Now that conditions have reached normality, the question arises, shall the low calorific power gas be abandoned and the gas industry go back to the manufacture of the high calorific power gas that was used before the war? Some of the gases that were used during the war contained as high as 10 to 20 per cent of inert matter.

The author states that use of the low calorific power gas necessitated an adjustment of gas appliances and that the results obtained were, on the whole, more economical than when the higher priced and higher thermal value gases were employed. The question that has now arisen is whether to go back to the original high thermal value gases or dilute the coal gas to such an extent that the best and most economical results are obtained by the consumer in its use. It also remains to be considered what means are to be taken to secure the proper dilution of the gas.

The author goes on to say that complaints will be received by the gas company no matter what the quality of the gas may be and that these complaints are much more often caused by variation in the quality of the gas than by any other factor. Therefore, experiments were carried out with the intent and purpose of maintaining the thermal quality of the gas within very narrow limits, so as to reduce the variation in calorific power as far as possible and counteract changes in specific gravity by proper adjustments in the apparatus or of the pressure.

Efficiency of Gas

From the purely theoretical standpoint it may be assumed at first glance that the efficiency of gas, when all conditions are maintained constant, would be reduced in proportion to the incombustible matter that is contained in it. For it might appear that these inert materials are nothing more than so much "ballast," and a certain amount of heat is con-

sumed in raising the temperature of these ingredients. It has been held that the addition of nitrogen to the gas has the effect of reducing its efficiency to a considerably greater degree than the mere reduction in calorific power would indicate. If, under the condition of equal quantities of heat per unit of time, the calorific power is reduced by the addition of nitrogen in the proportion of 1.2 to 1, then theoretically the efficiency of the gas is lowered in the ratio of 1.5 to 1. Then, again, the effect of carbon dioxide in comparison with nitrogen is 1.6 to 1. The author has substantiated these results, but does not feel entirely satisfied that the theory is correct. It must be remembered that in practice there are all sorts of unavoidable losses which must be taken into consideration and which are apt to render theoretical calculations of little or no value.

(A considerable portion of the article is devoted at this point to a discussion of certain experiments which were made by Terres and Straube and published in Das Gas und Wasserfach, 1921, page 309. These experiments were also concerned with the effects of inerts on the candlepower of gas.—Trans.)

Further Experiments

The author himself carried on certain experiments with a mixture of coal gas and coke oven waste gas. What is known as a Graetzin burner was employed. Candlepower tests were also made, but these are omitted because of their comparatively small importance to the American gas man.

The gas consumption was fixed at the outset at one hundred liters, or 3.53 cubic feet, per hour, and the primary air was carefully adjusted. Then a second series of tests were made in which the heat units per hour were maintained in each case at about the same rate as with the corresponding coal gas. The results that were obtained are shown in tables 1 and 2 that follow. The straight coal gas samples are designated by 1, 2, 3 and 4, and the mixed gases by 1a, 2a, 3a and 4a.

Table 1

Straight Coal Gas

1	5354	4787	2,7	1,4	4,1	120,2	430	358
2	5568	4982	2,6	1,2	3,8	123,3	447	362
3	5880	5321	3,1	1,2	4,3	126,1	479	380
4	6056	5463	3,6	1,7	5,3	126,0	491	389

Coal Gas and Oven Waste Gas

2a	4207	3816	5,4	21,6	27,0	43,2	341	791
1a	4479	4013	3,8	14,6	18,4	62,1	362	583
3a	5330	4825	3,4	8,9	12,3	113,6	432	380
4a	5652	5115	3,8	6,0	9,8	119,0	462	388

Discussion of Results

In the first part of table 1, the gases, pure coal gas, are arranged according to rising heat values. It is seen that the heat consumption for equal effect increases with rising calorific power. This would appear to confirm the contention that heat economy, when all other conditions are maintained constant, is greater in the case of poor gas than with rich gas. In the second part of the table the mixed gas samples are also arranged according to rising heat values, but the aforementioned rule is recognizable only in the case of samples number 3a and 4a. For in the other cases the flame volume was too small because of the extremely low calorific power of the gas. This may be readily seen from the small total heat consumption, which is shown in the last column of the table.

Table 2

Illumination with Graetzin burner, constant heat units per unit time.

No.	Calories per Cub. M. Gross	Net	CO_2+N_2 per ct.	Hourly Consumption gas (liters)	calories	Illumination HK	Calories per Hour 100 HK	Gas No. 1 =100.
1	5354	4787	4,1	100	430	120,2	358	100,0
2	5568	4982	3,8	100	447	123,3	362	101,1
3	5880	5321	4,3	100	479	126,1	380	106,1
4	6056	5463	5,3	100	491	126,1	389	108,6
4a	5652	5115	9,8	108	501	127,5	392	109,3
3a	5330	4825	12,3	115	495	126,3	392	109,3
1a	4479	4013	18,4	121	438	110,6	396	110,5
2a	4207	3816	27,0	135	460	108,8	423	118,1

In the case of table 2, with the heat units supplied per hour maintained as nearly constant as possible, the case is clearer still. The heat consumption rises without any interruption, when the effect (in this case lighting) to be produced by the heat is maintained constant. In other words, the efficiency of the gas is lowered as the quantity of inert matter in it is increased. It, therefore, follows that with equal supplies of heat per hour, the efficient utilization of the heat is impaired by the inert gases. But it must be remembered that in practice regulation is not carried out in accordance with the supply of heat units and besides the comparison did not hold good for other dilutents. Furthermore, the heating value of the gases that were used in the comparison were too far apart, so that this fact in itself could not but have important influence on the determination.

Heating Tests

The difficulty that was encountered in the heating tests was to secure a suitable burner, and hence the first water heating experiments were carried out with a good Bunsen burner which had both air and gas adjustments. The results of this test are shown in tabulation 3. The supply of gas was regulated in such a manner that the burner delivered 500 calories per hour. In each case the regulation of the introduction of air to the burner was carefully watched so that correct results were obtained and the burner was so fixed as to be directly under the middle of the vessel containing the water, so that the green cone of gas flame was about five millimeters from the bottom of the water boiler.

The amount of water used in the experiments was three kilograms and the temperature was raised 50 degrees Centigrade, from 20 to 70 degrees C. This small temperature differential undoubtedly accounts for the relatively high efficiency that was obtained

(Continued on page 257)

GAS MERCHANDISING

Domestic – Industrial

Ideas for the Man Who Sells

William H. Matlack

JANUARY and February have passed and there are but ten months sticking to the calendar in which we are to show that gain of 50 per cent in GAS SALES. How about it? Have you formulated your plans? Above the name of each of the remaining ten months have you written: "This month we are to campaign on ————————." Does your plan tie in selling effort with Manufacturer's National advertising or have you worked out a plan of your own from bills to broadsides, that feature future sales activities for the year? Planning your work and working your plan will get the 50 per cent increase—but a start must be made soon, for building will boom with spring flowers, and the man who has not planned his work will be fortunate to keep pace with new installations and have no time to

saturate the section where he now has distribution lines and low per meter consumption. This is the season when the gas company can profitably devote time to the builder and architects. Sow a few seeds in the building field and when the paper plans develop the population will apply for gas service.

HOW DO YOU SATISFY THEM?

HOW do you satisfy the high bill howler? That has been a question before the gas man for generations. One man told us that he has devised a chart that shows the customer just what work each appliance does in an average home and whenever a howler comes into his office he first takes a paper and pencil and lists the number of people in the household, the number of days' service the gas bill covers, and then he brings out the chart and explains just what the customer has received in the way of service, meals cooked, hot water and heat. Then he brings in a little talk about what the customer would have to do if he was not fortunate enough to secure gas service. The result, he tells us, is gratifying, for very few people are so thick-

skinned that they cannot be sold the idea that gas service is worth every dime they pay for it. To use this man's expression: "It's all in the way you present your proposition. I sell them gas service and in so doing they forget cost. I do this for the simple reason that I once worked for a manager who had the habit of being popular. You know, a big man, and every time a complaint was registered and he got wind of it, he would compromise the bill, or me, and that made me mad, and I resolved that if I ever had an opportunity to make the final analysis I would sell the service. That is what I am doing and it is so simple I do not see why everyone does not do likewise."

WOMEN WINDOW SHOPPERS

WOMEN also window shop. Look at Broadway and Forty-second, where life flows fastest. Squint at the signs of electrical advertisers. Note that they advertise the merchandise that is exposed in the windows of the shops nested below them. Get your merchandise into the window. Expose it to women and you will sell it.

As The Journal Views It

THE "OWN YOUR OWN HOME" MOVEMENT

Perhaps one of the most important and far-reaching enterprises that has been recently inaugurated throughout the country is the "Own Your Own Home Movement." The purpose of this undertaking is to encourage the American citizen to own the home in which he lives. Those who reside in large cities such as New York, Chicago and Philadelphia live under conditions which are a direct result of the desire of great multitudes of people to congregate within a comparatively small area for business and social reasons. The life of the large city dweller is one which takes him constantly away from his home. It is a fact that he has not a home, in the strict sense of the word.

Living in small flats in tremendous apartment houses means a very small consumption of gas, as far as the gas company is concerned. There are many thousands of people who live in this manner and who consume but little gas, not even cooking their own breakfasts. Of course, conditions in such homes are not conducive toward the use of gas because there is no place there for a real kitchen. All meals are eaten outside. It has been often pointed out that these are entirely unprofitable customers, while the poorer customers, who only live in a flat or a tenement, and, nevertheless, have to use gas to cook their meals at home, are the ones that bear the burden which is due, as one well knows, to the inequitable character of the rate structures which is generally in force throughout most states.

Therefore, the "Own Your Own Home Movement" is one in which the gas company is particularly interested. Wherever expositions have been held or are planned, it is gratifying to see that the gas company is not making the mistake of passing the opportunity up of exhibiting its wares to prospective owners of homes. For it must be remembered that, even though the gas customer may be a profitable one and may use gas for cooking, while he lives in an apartment, when he moves to his own home he will find more use for gas than he did while a tenement dweller, for he will then be a prospect for a gas water heater, at any rate, and in time perhaps for other gas consuming commercial appliances.

Thus, while the interest of the gas company may be a personal one in this movement, for, after all, it is primarily interested in increasing gas sales, nevertheless, by fostering this idea of owning your own home, the gas industry is performing a very definite service to the country. The responsibilities of a home, owned by the dweller therein, undoubtedly makes for better citizenship. There is a greater element of solidarity in the home owner than in the habitant of an apartment, even though the latter may be more plentifully supplied with worldly goods. To own a home ties you down to the soil of your country. It makes the man and woman a better citizen in all senses of the word.

The movement is commendable in every way. The gas industry is urged to take active part therein. It has not been backward in this respect, but there may still be companies who are not entirely familiar with this movement and who perhaps do not thoroughly understand its peculiar significance to them. The opportunity presented should not be overlooked.

BURNING COAL WASTES MORE THAN FUEL

Municipalities are going after the smoke nuisance this year as they have never done before, according to reports from Pittsburgh, Philadelphia, Chicago and other industrial communities.

The United States Bureau of Mines, in a recent report, says that smoke causes an annual loss of $7.66 for each man, woman and child in the larger industrial cities of the country. Residents of Philadelphia suffer a loss of $16,852,000 a year from smoke. Chicago's 1924 economic loss from smoke, aside from injury to health and resultant deaths, was placed at $42,500,000 in a recent report of the Smoke Abatement Commission.

On the basis of the estimate, the report said that Chicago's laundry bill per capita was $3.25 larger than that of the ten leading cities of the country, except New York. These mathematicians have it that smoke costs each Chicago family $50 a year, and this fails to take into consideration the extra effort that housewives and washerwomen in homes put

into this increasingly difficult business of keeping down the city's grime. Washington, with only about $2 a year per capita spent for clean clothes, represents the best the nation has to offer in the way of cleanliness.

The towel bill alone in Chicago schools is said to total $22,000, which the School Board is balking at paying. It proposes to charge a penny a towel for each one used by the hard-pressed youngsters in the city schools.

Its studies of the 400,000 smokestacks that grace the Chicago skyline convince the Abatement Commission that at least $8,000,000 is lost annually in the poor use of fuel, while loss of health and business losses from such palls of smoke as settle over the city when clouds hang low were not computed.

Health Commissioner Herman Bundesen has said that a Chicago baby has a black coating in his lungs before he is three months old, while emphasizing that every Chicagoan is a smoke burner. Similar conditions prevail in almost every other industrial center.

Sporadic attempts to meet the situation have been started from time to time in various sections of the country, but so far no considerable decrease in the amount of smoke has been apparent. The Smoke Abatement Commission is asking for $80,000 from the City Council with which to employ an additional 50 smoke inspectors to keep a watch over the city's smokestacks, or 80 in all to keep an eye on nearly half a million stacks.

Chicago is also to measure the soot that falls daily and health officers say that an effort will be made to keep the city safe for the lungs and linen of its inhabitants.

"A smokeless Chicago depends in the long run upon the willingness of the small householder to shoulder his share of responsibility," says F. A. Chambers, chief of the Smoke Abatement Division of the Sanitation Bureau.

"All over the city, from well-nigh 400,000 dwellings and 60,000 apartments, furnaces are sending up through chimneys small streams of smoke, none of it black or thick enough to constitute a violation of the ordinance, but all of it filled with unwholesome and defacing soot and entirely unnecessary. Each presents a definite problem in fuel engineering which can be met with a little time and trouble and, perhaps, small additional expense.

"Where, as in most cases, the householder or apartment house owner cannot practically install smoke-consuming apparatus, he can at least choose his fuel scientifically. The use of soft coal should be abandoned. Smokeless coal should be substituted and, as this coal becomes exhausted or deteriorates in quality, as it probably will with increased consumption, the furnaces should be fed coke, an ideal fuel from the consumption point of view, although a bit hard to manage and likely to get the janitor out of bed somewhat earlier. As coke comes more generally into use, gas, of which it is a by-product, will become cheaper and will be used more extensively for heating purposes."

Knowledge Is Power

To know your goods is half the selling

J. B. Dillon

UNLESS one knows something definite about a thing, one cannot discuss it with any enthusiasm, nor can one hold an audience unless what is said has the proper ring. This applies to sales talk just as much as it does to an orator who hopes to hold a large audience. Usually our sales talk is confined to one or two people at a time, yet, unless we are really conversant with the subject, our talk will lack the power to sell.

An Example

I have just laid aside a newspaper carrying a full-page advertisement of a well-known automobile, and on that page are given 106 reasons why a purchaser should select that car. Every one of the reasons rings true, and every part of the car is mentioned as having been made with the best material available. If the salesman has memorized most of these reasons—and they do—a prospective purchaser is sure to meet with an enthusiastic salesman, and if the customer really wants to buy a car, that car is sold.

Do we advertise our gas ranges with the same vim?

I fear not; at least, I do not see them.

Unreasonable—

It would be unreasonable to ask either the manufacturer or the dealer of gas ranges to write a treatise upon every screw or valve that enters into the construction of a gas range, but it is quite necessary that we know all its functions, and it is not unreasonable to say that whenever we offer to sell a person a first-class range we are doing that person a favor, because:

1—There is nothing to equal the gas range as a cooking, frying or boiling utensil in the home, because it is the King of Culinarydom.

(Continued on page 260)

INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT — YOU CAN DO IT BETTER WITH GAS

Lesson No. 62

Heat and Change of State

The Fusion or Melting Temperature

HENCE a most important property of any substance is the temperature at which it fuses or melts, that is, is changed from the solid to the liquid condition. Each substance has its own fusion or melting point, and this point is constant for any one substance, provided the pressure remains constant. In fact, so invariable a property is this melting temperature that the purity of substances is tested by determining the fusion point. This is common practice in organic chemistry, in the production of organic compounds. If the compound is pure, it will have a definite fusion temperature. This applies to metals and various other substances as well. However, as in every physical or chemical determination, different results have been obtained by different observers, but this difference must be laid to error in making the experiment. Experimental error always occurs and is dependent on the personal equation of the experimenter.

Variation of Fusion Temperature

However, it is possible for the fusion point to vary. There are a number of causes of its variation, besides purely experimental error. Thus, the material whose fusion temperature is being measured may contain impurities. These impurities effect the melting temperature of the substance. They may either raise it or lower it, dependent on their own fusion points. Sometimes the so-called impurity is purposely added in order to obtain a mixture which has a high or low melting point and still possesses other important properties.

Alloys

Low melting point alloys are made in this manner. Metals ordinarily have high melting points, but it is possible to combine two or more of them in certain well-defined proportions to obtain a mixture, which is known as an alloy, which possess a very low melting point. Thus one such alloy, which is made from one part of cadmium, four parts of bismuth, four parts of lead and one part of tin, has a melting point as low as 165 degrees F. The melting point of cadmium is 610 degrees F., that of bismuth 520 degrees F., that of lead 618 degrees F. and that of tin 450 degrees F., all which are seen to be considerably higher than the melting point of the alloy.

An alloy is, therefore, not such a simple substance as it looks, for, if it were, the melting point of the mixture could readily be determined by multiplying the proportions of the ingredients by their respective fusion temperatures and dividing by the sum to obtain the average melting point of the mixture. Alloys are really solutions of one metal in the other.

FUSION OR MELTING
-OF SUBSTANCES
Crystals of Common Salt
These Common Salt Crystals melt at a — definite Temperature, 1510 degrees Fahrenheit.
Crystaline Bodies have Definite Melting Points.
Lump of Paraffine Wax
Paraffine is amorphous and softens at a lower temperature than its commonly recognized melting point.
It frequently melts completely at 130° Fahrenheit.

Fusion of Crystalline and Amorphous Bodies

It must be remembered in considering the question of fusion temperature that only those substances which are crystalline in nature possess accurately defined melting points. Other substances of non-crystalline nature, known as amorphous substances, literally substances without form, do not melt instantly when the temperature reaches the proper point, but soften gradually as the temperature approaches the melting point and are finally converted into the liquid state. This fact can be readily seen when melting a piece of glass or paraffine. The melting temperature of paraffine is 130 degrees F., but it commences to soften considerably below that temperature.

Advertising Suggestions On Selling Gas Appliances

How advertising can be used to help sales

Frank V. Faulhaber

THERE is nothing like a little advertising campaign for stirring up extra business. Many gas companies do not use enough newspaper advertising, some rarely, if ever, placing one in the interest of more business. It may be held that advertising does not pay, but this belief is due to the lack of faith and proper and thorough advertising. When the gas company goes fully into the matter, tackling the problem from all angles, there will be no cause to complain; the results, instead, will be highly gratifying.

Expense? No, advertising is not to be considered an expense. But certainly the gas company should advertise consistently. Only thus can be determined the true pulling value of advertising. And it is not at all necessary to run large advertisements. After all, what is most important is the advertising copy. It is not necessary to use much space, a suitable advertisement being of ordinary newspaper column width, the depth ranging from four to eight inches.

Preparing the Copy

To whom is to be assigned the task of writing the advertisements? Arrangements can easily be made with the local newspapers. But the copy may also be prepared in the gas company office. The closer the co-operation between the gas company and the newspaper, the more effective the ultimate advertisements are bound to be. Determine, now, whether there is not someone within the offices ready to undertake such a job.

The Border

An exclusive border for the advertisements should be decided upon. The gas company should see to it that it secures a set place in the newspaper, preferably near the outside edges if at all possible. An attractive, though not bizarre, border and a good position in the newspaper will make it easy for the reader to find the advertisements. And if these are at all interesting they will be read with interest.

The problem to which we cannot accord too much attention is he one of writing the advertisements. Too many words should not be used. In fact, the fewer the better. The gas company can educate its customers in all phases of gas and gas appliances through its advertisements.

The small, interesting advertisement has a place as an educating agent. Dry-as-dust statements should not be used; superlatives must be shunned. The latter make no impression upon the right-thinking reader, any way. A good advertisement may contain anywhere from 50 to 200 words, according to the type used and the space provided. Eight-point type is suitable, ten-point is still better. With enough white space around the body of the ad. and a compelling head, terminated by the gas company's name and address, the advertisement will be adequate.

Change of Advertisement

The advertisements should regularly be changed, thus making for novelty. There should always be something new to interest the reader. Textual content—that is the essential factor; that is what draws the business and makes the advertisements popular and successful. And, naturally, every advertisement affords the gas company a new opportunity. Every new advertisements holds out something new for the reader; there is always something to look forward to; thus, the advertisements do not dull, do not repel and never want for attention.

All Merchandise Should Be Advertised

It is well not to overlook the fact that the smallest article the gas company has to sell is not so insignificant that it should not be advertised, that something interesting and instructive about it cannot be said. How many gas companies are realizing on their opportunities here? Take, for instance, the common gas burner. Whenever a gas company desires to dispose of its own product here rarely is advertising resorted to. Display windows may be devoted to a few demonstrations, and the right

(Continued on page 260)

PROGRESS IN GAS TECHNOLOGY
Domestic and Foreign

LOW TEMPERATURE CARBONIZATION

BITUMINOUS fuel is fed into a horizontal rotary drum which is externally heated to about 400 degrees C. The fuel becomes soft at this temperature, and is then discharged into a stationary retort which is externally heated to a higher temperature. Movement of the material is thus avoided at the stage when it becomes solid and brittle, and dust is not formed. The volatile products are drawn off between the two retorts.—(British Patent No. 225,172.)

PURIFICATION OF COKE-QUENCHING WATER

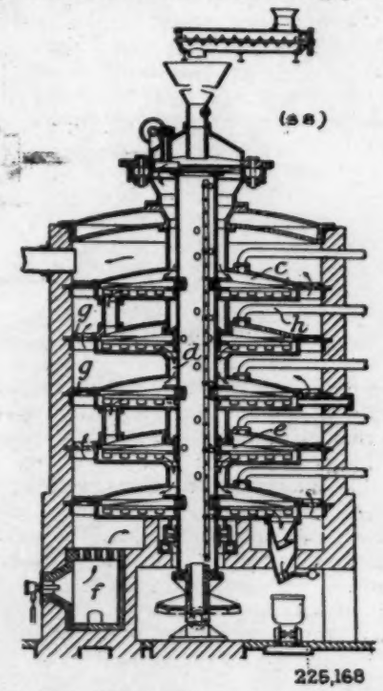
WATER from coke-quenching apparatus contains notable quantities of hydrogen sulphide and hydrocyanic acid, and may be purified by passing through rough filters containing coke, which retain 85 per cent of the acids present. Final treatment with concentrated bleaching powder solution, to which sodium carbonate has been added, is recommended. The amount of bleaching powder required may be determined by adding 3—4 drops of a sulphuric acid solution of indigo-carmine to 200 c.c. of the water and titrating with alkali hypochlorite solution until the blue color disappears. (Water and Water Eng., 1924, 26, 381.)

RAPID DETERMINATION OF SULPHUR IN COAL

THE powdered coal (0.5 g) is mixed with barium peroxide (3.0 g.) and granulated aluminum (0.3 g.), and the mixture briquetted and ignited in a porcelain or quartz crucible covered with a lid with a hole in it or with a second inverted crucible. The melt contains the total sulphur as barium sulphide, together with aluminum oxide, barium oxide, aluminum and barium carbides, an alloy of aluminum and barium, and carbonaceous matter. It is transferred, when cold, to a flask carrying a dropping funnel and reflux condenser and attached to a carbon dioxide generator, and is warmed with hydrochloric acid of 12-14 per cent strength. The hydrogen sulphide liberated is swept by means of carbon dioxide through the reflux condenser and through a 10-bulb absorption tube containing a solution of cadmium acetate, the precipitated cadmium sulphide being determined in the usual way with iodine and thiosulphate. The process, of which full manipulative details are given, requires generally less than 45 minutes, and at the outside one and one-half hours. In the case of coals with a high sulphur content 0.2 g. of Eschka mixture is incorporated in the briquette before ignition. The coals should be analyzed in the moist state, as there is a tendency towards low results when coal dried at 105 degrees is used. The method appears to compare favorably, as regards accuracy, with that of Eschka, but is not, in its present form, applicable to coke.—(Z. angew. Chem., 1924, 37, 848-851.)

CARBONIZING APPARATUS

MATERIAL to be distilled is passed downwards through a series of chambers (c), each having a rotary rabble (e) to agitate the material and transfer it from the center to the periphery, and vice versa. Connecting passages (d)



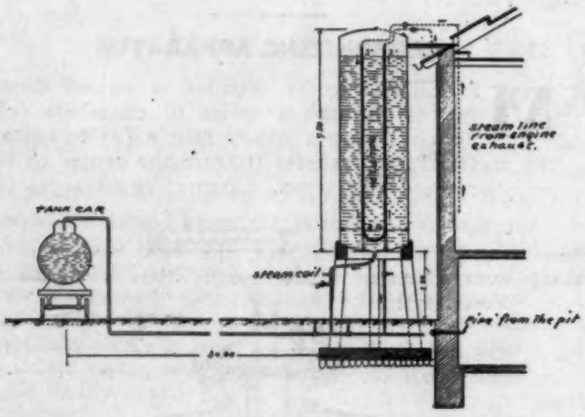
225,168

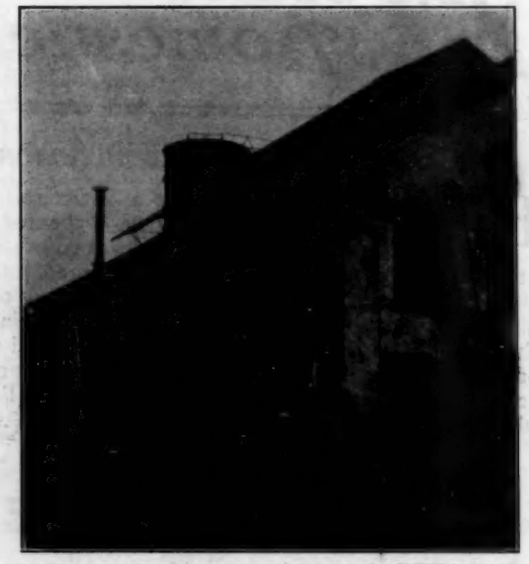
are provided at the center and periphery, and the chambers are heated by hot gases which pass upwards around them from a chamber (f). Openings for the heating gases are provided in the discs (g) alternately at opposite sides.—(See British Patent No. 225,168.)

DEHYDRATION OF CRUDE TAR

TAR is dehydrated in the following manner in the gas works of St. Margarethen, in Switzerland. (For further details, see Bulletin Mensuel, 1924, No. 10.)

The tar is permitted to remain in the tar pit for as long as possible and then it is pumped from the pits into storage tanks. Each of these tanks has a capacity of 25,000 liters. Each tank is also provided with a heating coil through which superheated steam is passed. The tar is heated for a period of 48 hours and the water separates out of the same. The tar is sold on a guarantee that it will not contain more than 2 per cent moisture. One feature of the heating arrangement is that the heating coil does not possess any device for removing the water of condensation and the water is carried along with





the steam as it leaves the heating coil. This causes vibration of the pipe, which is said to have an important bearing on the separation of the water from the tar.

The installation is shown in the accompanying illustration.

STEP OUT!

It is a great thing to make plans in your mind—if you carry them out. But plans that never get any farther than your mind are nothing but dreams.

The things you think you are going to do seem wonderful things, but there is nothing wonderful about them until they are done. Anyone can dream dreams and make plans on paper. It is the execution of the dreams and plans that tells whether they have any merit.

The plan that is not carried out is likely to be a plan that cannot be carried out. At all events, we do not respect a plan much so long as it is nothing but a plan.

The epitaph on the gravestone of John Aubrey reads:

"He walked beneath the moon,
He slept beneath the sun.
He lived a life of going to do
And died with nothing done."

Doesn't that epitaph remind you of some men you know? They are visionary. Their plans are mere dreams and they come to naught.

A man is rated by his accomplishments, not by his dreams.

When you sit in the haze from the smoke of a good cigar and figure out plan after plan that you believe would advance your business, don't stop with merely planning. Save some energy for carrying out the plans.

Start some operation right away that is a part of the work of putting your plan into effect. Write a letter. Send a telegram. Arrange a conference. Make a purchase. Take the first step. It is easy to do that much, and the next step and the next, may be just as easy as, one after another, they come along. Keep stepping!

A Novel Use for a Gas Heater
Turtles Warming Themselves in the London Zoo

Catechism of Central Station Gas Engineering in the United States

Installment No. 62

(Continued from last week)

In other words, the heat developed by the complete oxidation or burning of one cubic foot of hydrogen to water is equal to that necessary to raise 328 lb. of water 1 deg. F. from its temperature of greatest density, 39.1 deg. F.

In the case of liquids and solids the calorific value is expressed in heat units per pound. Thus carbon has a calorific value of 14,647 B.t.u. per pound when burned completely to carbon dioxide gas, CO_2.

Complete Combustion of Hydrogen

The complete combustion of hydrogen, or of substances which contain hydrogen, produces water, which, while it is liquid at ordinary atmospheric temperatures, is a vapor at the temperatures at which the products of combustion often escape under the conditions of the combustion of gases. To convert a pound of water from the liquid state to that of vapor at 212 deg. F. 966 heat units are required. When the calorific value of a substance is determined by means of a calorimeter the water vapor is condensed and its latent heat is set free and is included in the calorific value, as is also the heat given out by the condensed water in cooling from a temperature at 212 deg. F. to that at which it leaves the calorimeter. Each pound of hydrogen burns to 9 lb. of water, so for each pound of hydrogen in the combustible there will be a difference between the true calorific value and the amount of heat available when the products of combustion escape at a temperature of 212 deg. F. of $9 \times 966 = 8694$ B.t.u., plus the number of British thermal units given out by 9 lb. of water in cooling from a temperature of 212 deg. F. to that at which the products of combustion leave the calorimeter. If the temperature of the products of combustion is reduced to 60 deg. F. by the calorimeter, the amount of heat given off by the water produced from 1 lb. of hydrogen will be approximately $(212 - 60) \times 9 = 152 \times 9 = 1{,}368$ B.t.u., and the difference between the total calorific value of 1 lb. of hydrogen and the heat available when the water remains as vapor will be $8{,}694 + 1{,}368 = 10{,}062$ B.t.u. If, therefore, the total calorific value of hydrogen, as determined by the calorimeter, is 62,100 B.t.u., the heat available when the water escapes in the form of vapor at 212 deg. F., will be $62{,}100 - 10{,}062 = 52{,}038$ B.t.u., and the heat available per cubic foot will be 275 B.t.u. In the same way, knowing the percentage of hydrogen contained in any substance, the heat available with the water as vapor can be obtained by making the proper deduction from the total value.

Calorific Value of an Element

The calorific value of an elementary substance such as carbon or hydrogen can be obtained only by experiment. In making such determinations, an instrument called a calorimeter is used. This is so arranged that the heat produced by the combustion of a known weight, or volume, of the substance is imparted without any loss to a known weight of water. By observing the temperature of the water both before and after the combustion has taken place, the extent to which the water has been heated is determined and the heat absorbed by the water, which is necessarily that produced by the combustion, can then be easily calculated. The instrument must be so designed and handled that no loss of heat takes place, or at least so that any heat that is not accounted for is an inappreciable percentage of the total.

Calorific Value of a Compound Substance

In the case of a compound substance the calorific value can either be obtained by experiment or, with more or less accuracy, by calculation. When the substance is a gas and an accurate analysis is available, the calorific value can be obtained very accurstituents and the percentage in which each is present. When the substance is in the solid or the liquid state any determination of the calorific value made by calculation is approximate only, since so far it has been found impossible to determine exactly the effect produced upon the calorific value of a gas by the entrance of this gas into a compound which exists as a solid, or a liquid. For instance, hydrogen as it exists in coal has not the same calorific value as it possesses when it exists as a gas, and although various formulas have been worked out for the calculation of the calorific values of different kinds of coal from their chemical composition, these formulas, while they may fit the particular samples of coal used in the experiments from which they are worked out, do not give accurate results when applied to other samples. It is, therefore, more accurate to determine the calorific value of compound substances in a solid state or a liquid state by calorimeter tests than by calculation. This is also true of gaseous substances when, as is usual in the case of illuminating gas, the exact composition is not shown by the analysis, there being grouped together in one item several substances giving similar chemical reactions but possessing widely differing calorific values.

Conversion from Weight to Volume Basis

316. Give the calorific value, in British thermal units, of a pound, and in the case of gases also that of a cubic foot, of each of the following substances:

Carbon, C.
Carbon Monoxide, CO.
Hydrogen, H_2.
Benzene, C_6H_6.
Methane or Marsh Gas, CH_4.
Ethylene or Olefiant Gas, C_2H_4.
Ethane, C_2H_6.
Acetylene, C_2H_2.

Ans.	Per Pound.	Per Cu. Ft.
Carbon, C	14,647	
Carbon Monoxide, CO	4,383	325
Hydrogen, H_2	62,100	328
Benzene, C_6H_6	18,094	3,732
Methane or Marsh Gas, CH_4	24,017	1,016
Ethylene or Olefiant Gas, C_2H_4	21,898	1,621
Ethane, C_2H_6	22,338	1,772
Acetylene, C_2H_2	21,856	1,502

The figures given by different experimenters for the calorific value of gases vary, as do the figures for the weights of a cubic foot of the gases, and, therefore, the figures for the calorific value per cubic foot also vary. Thus Newbigging, quoting from Letheby, gives the following figures for the calorific value per cubic foot:

H_2	329
CH_4	996
CO	320
C_2H_2	1,251
C_6H_6	3,860

and the Committee on Education of the American Gas Light Association, quoting from Julius Thomsen, gave for some of the same gases:

H_2	325.5
CH_4	1,022.8
CO	334.7
C_2H_2	1,493.4

The values first given are based on the determinations of calorific value made by Berthelot as given in Poole's "Calorific Power of Fuels," and the weight of gases calculated from the weight of air as determined by Regnault and afterwards corrected for slight errors.

These figures give in each case the total calorific value. The amounts of heat available with water as vapor, figured as explained in the answer to question No. 315, are given below. In figuring on problems in combustion, in which fuels containing hydrogen are used under conditions such that the water remains in the state of vapor these values should always be employed to arrive at the true results.

	Per Pound	Per Cu. Ft.
Hydrogen, H_2	52,038	275
Benzene, C_6H_6	17,322	3,572
Methane or Marsh Gas, CH_4	21,502	910
Ethane, C_2H_6	20,336	1,613
Ethylene or Olefiant Gas, C_2H_4	20,461	1,515
Acetylene, C_2H_2	21,081	1,448

Calorific Power of Coal Gas

317. An illuminating gas has the following composition by volume:

Carbon Dioxide, CO_2	1.40%
Oxygen, O_2	0.49%
Illuminants	4.85%
Carbon Monoxide, CO	7.25%
Hydrogen, H_2	48.15%
Marsh Gas, CH_4	35.72%
Nitrogen, N_2	2.14%

Calculate the calorific value per cubic foot, assuming the illuminants to be made up of 80% of ethylene, C_2H_4, and its homologues, and 20% of benzene, C_6H_6.

Ans. To calculate the calorific value per cubic foot of an illuminating gas the composition, by volume, of which is known, it is necessary to multiply the calorific value per cubic foot of each combustible constituent of the gas by the volume of such constituent contained in a cubic foot, as shown by the analysis, and then add together the products of these multiplications, the sum so obtained being the required calorific value per cubic foot of the gas.

The Combustible Ingredients

The combustible constituents of the gas, the analysis of which is given in the question, are the Illuminants, Carbon Monoxide, Hydrogen and Marsh Gas. Analyses of illuminating gas as commonly made do not afford exact information as to the composition of the hydrocarbons which, as is done in this case, are often grouped together under the name of Illuminants or Heavy Hydrocarbons. Since the calorific values of the various hydrocarbons which may be present in such a group are widely different, this uncertainty as to which ones are present and in what proportion, makes the calculated calorific value of the gas subject to considerable error, and these calculated values can only be accepted as being accurate when the analysis has been very carefully made and includes a comparatively close subdivision of the heavy hydrocarbons. No such subdivision having been made in the question, it is necessary to assume one and the assumption may, or may not, be correct.

The Calculation

From the answer to question No. 316 the calorific values are obtained as follows, in British thermal units per cubic foot:

Ethylene	1621
Benzene	3732
Carbon Monoxide	325
Hydrogen	328
Marsh Gas	1016

(Sixty-third Installment Next Week)

THE INERT MATTER IN GAS

(Continued from page 247)

in these tests. These results are seen in the last column of tabulation 3.

Water Heating Tests with Mixed Gas

Table 3

No.	Heating Value Gross	Heating Value Net	CO_2+N_2 per ct.	Hourly Consumption in gas liters	Hourly Consumption in calories	For-1 kg. water through 50°C in gas liters	For-1 kg. water through 50°C heat units	efficiency in in p.c.
4	6056	5465	5,3	90,6	495	12,1	65,9	75,8
3	5880	5321	4,3	96,6	514	12,4	65,7	76,1
4a	5652	5115	9,8	99,9	511	12,7	65,1	76,8
3a	5330	4825	12,3	103,2	498	13,4	64,7	77,3
2	5568	4982	3,8	102,4	510	12,9	64,1	78,0
1	5354	4787	4,1	100,9	483	13,4	64,0	78,2
1a	4479	4013	18,4	130,6	524	15,7	63,1	79,3
2a	4207	3812	27,0	131,0	500	16,0	61,1	81,9

Deductions from First Heating Tests

The results which are given in the following tabulation again showed that the presence of inert matters had apparently no obvious influence on the heating operation. Inerts are considered as the total amount of carbon dioxide and nitrogen present in the gas. Thus the efficiency of the heating, as far as the rise in temperature of water from 20 to 70 degrees C. is concerned, is not affected by the presence of inert matters. And here again the percentage efficiency rose, with one exception, as the calorific power of the gases fell. This one exception is assigned to experimental error by the author. However, it is quite clear that it is not possible to derive any very definite conclusions from the results of these experiments. For the variation in the calorific power of the gases was so great as to obscure the picture.

Greater Uniformity of Thermal Values Obtained

It was for this reason that a further series of experiments was carried out in which the gases employed possessed more uniform heating value which was obtained by admixing different proportions of inerts with the original gas. A special burner was employed in these tests. This burner, the Classen burner, was fitted with a device to take care of the varying specific gravity of the different gases tested. Distances between the inner cone and the vessel in which the water was contained were carefully maintained constant throughout the tests. The temperature of the water was raised in this case to 95 degrees C. instead of to 70 degrees C. The gas consumption was regulated in such a manner, in accordance with the heating value of the gas, that the heat input per hour was 900 calories, which figure did not vary more than 4 per cent either way. Twelve different gaseous mixtures were tested in this manner.

The results of these tests are shown in tabulation 4.

Table 4

Water Heater Tests with Different

Mixed with coal gas	Heat Value in calories gross	Heat Value in calories net	CO_2+N_2 in %	1 Kg. H_2O Raised 75_2 C. Gas 0°760	1 Kg. H_2O Raised 75_2 C. Heat units	Efficiency in %
Hydrogen	4339	3796	2,5	25,83	98,0	76,50
	4141	3643	2,3	25,90	94,4	79,49
	4093	3605	2,3	26,57	95,8	78,29
Average	4191	3681	2,37	26,10	96,07	78,09
Waste gas	4016	3568	23,0	27,93	99,1	75,68
	4013	3576	19,1	27,48	98,3	76,31
	3946	3499	23,9	28,50	99,8	75,15
Average	3992	3548	22,0	27,97	99,1	75,71
Nitrogen	4274	3805	20,6	26,69	101,6	73,84
	4210	3778	19,0	25,80	97,5	76,96
	4043	3634	22,8	26,98	98,0	76,50
Average	4176	3739	20,8	26,49	99,0	75,76
Waste gas and water gas	4114	3702	19.7	26.42	97.8	76.68
	4073	3647	17,2	26,67	97,3	77,11
	4010	3615	21,0	26,97	97,5	76,94
Average	4067	3655	19,3	26,69	97,53	76,91

Discussion of Results

The greatest variation that occurred in the mean specific calorific power of these gases was 5.65 per cent. The differences in the specific gravity of the gases was counteracted by varying the amount of gas fed to the burner in unit time. Therefore, it may be held that the sole difference between the gases was the quantity of inert material that was contained in them. The results in the aforementioned table show this very clearly.

The gases which were diluted with hydrogen which contained from 2.3 to 2.5 per cent of carbon dioxide and nitrogen, the inerts required only 94.4 to 98 calories to raise one kilogram of water 75 degrees C. The other nine with 17.2 to 23.9 per cent of inerts required 97.3 to 101.6 calories. Thus it is seen that the presence of large amounts of inert gases impairs the heat economy of the process, all other conditions remaining equal. But, on the other hand, the difference is very small, only from 1.5 to 3 per cent more being required of gases with 19 to 22 per cent inert matter than of those with 2.5 per cent. The question naturally arises whether it is worth while bothering oneself with such small quantities in practical work. For it must be remembered that unavoidable differences take place in the calorific power of the gas, not to mention the losses that are incurred in the heat process itself, due to incorrect burner regulation, radiation and convection.

Variation in the Calorific Value of the Gas

Tests were also made to determine the effect of variation of the calorific power of the gaseous fuel. The results of these tests are shown in tabulation 5. The experiments were carried out under the same conditions as have been discussed above. The conclusion drawn, that is evident from the following tabulation, is that the lowering of the calorific power has a favorable effect on the heating efficiency, for all the diluted gases give a better result than the pure coal gas. But it is seen as well that the greatest variation in the efficiencies of the seven mixed gases is only 1.15 per cent; they all lie between 75.15 and 76.39 per cent. Gases with 20 per cent and 30 per cent of carbon dioxide and nitrogen give practically the same efficiency, for the disadvantageous effect of the increase in the percentage of inert matter in the gas is counteracted b ythe favorable effects of the lowered calorific power of the combustible.

meter or approximately 35.3 cubic feet of gas per hour. In place of the usual metal working piece, which is worked up in the forge, a bar of magnesia was employed, and this was cemented into the furnace and the temperature of the magnesia bar was determined with the aid of the Fery pyrometer.

A number of preliminary tests were carried out and the hourly consumption of gas was maintained constant at the outset, and then the amount of heat added to the furnace was kept constant. However, in both cases the results that were obtained were found to be unsatisfactory, as the temperatures at which the operations were carried out varied and before comparative figures can be obtained it is necessary to correct the direct result of the experiments in various ways.

The operator must heat the piece of metal he is working with to a definite temperature in order to be able to forge or weld it properly. Thus if the gas flame does not yield this temperature, then it cannot be used for the purpose.

Table 5
Water-Heating Tests with Gases of Varying Calorific Value

No.	Coal Gas	Calories per Cub. M. Gross	Net	Co_2+N_2 Gas (l.) at Per Ct.	1 Kg. of Water Raised 75° C N. T. P.	Efficiency Calories	Per Ct.
1.	Undiluted	5127	4553	1.2	22.00	100.2	74.85
2.	"	5091	4534	1.2	22.40	101.6	73.82
3.	"	5090	4519	1.0	22.40	101.2	74.12
	Mixed with:						
2.	20 per cent of hydrogen	4603	4076	1.0	24.27	98.8	75.91
1.	10 per cent of waste gas	4555	4047	11.1	24.33	98.4	76.22
3.	10 per cent of waste gas	4497	3977	11.1	24.70	98.3	76.30
2.	40 per cent of hydrogen	4256	3737	0.7	26.57	99.3	75.53
1.	20 per cent of waste gas	4016	3568	21.0	27.93	99.1	75.68
3.	20 per cent of waste gas	3946	3499	20.8	28.50	99.8	75.15
1.	30 per cent of waste gas	3547	3143	30.8	31.53	99.1	65.68

Mean heat generated per hour, 900 calories.

No error is involved when the results that were obtained in the experiments with the water heating burner are applied without any further calculation or change to all other sorts of gas apparatus. It may, therefore, be concluded that all other heating operations, such as cooking, broiling, roasting and baking, as well as the use of gaseous heat in drying oven, lacquering furnaces and the like, are not adversely affected by the presence of reasonable percentages of inert matter in the gaseous fuel. However, this does not hold good for the case of gas fires which are used in the production of high temperatures. In this case it is necessary to conduct further tests to determine just what this effect is.

High Temperature Tests

For this purpose the author employed a small gas-fired forge in which compressed air was employed and which consumed approximately one cubic

The Best Method

It was, therefore, found that the best method was to select a certain temperature and to determine the gas consumption that is required to maintain the furnace at that temperature. Thus a temperature of 1400 degrees C. was selected as being best suited for welding and a test was made to determine the quantities of gas that had to be consumed in the furnace in order to maintain that working temperature. In each case the furnace was heated up to this temperature and then maintained thereat for the period of 60 minutes before gas consumption was measured. Then the admisson of both gas and air was regulated in the usual manner and thereafter the temperature was kept at the desired point for 30 minutes. This refers particularly to the temperature of the magnesia test piece which is cemented into the furnace.

During the progress of the test the combustion

process was carefully checked up by taking samples of the flue gases and analyzing them. The admission of air was regulated in such a manner that the flue gases were maintained with a constant content of half a per cent of free oxygen. This was done for the reason that preliminary experiments had shown that the highest temperatures were obtained and maintained under these conditions.

The Results

The results that were obtained in this series of experiments are given in the following tabulation, number 6:

Table 6

Gas-Forge Working with Various Gas Mixtures at 1388° to 1390°

Coal Gas Mixed with	Calories per Cub. M. Gross	Net	CO_2+N_2 Per Ct.	Hourly Consumption Gas(l)at N.T.P.	Calories
Hydrogen	4421	3886	2.3	835	3377
"	4339	3796	2.5	914	3469
Mean	4380	3841	2.4	900	3453
Waste gas	4013	3576	19.1	967	3458
Waste gas and	4114	3702	15.9	935	3460
Water gas	4078	3647	17.2	951	3469
Mean	4096	3675	16.55	943	3465

Five different gases are shown in this tabulation. The working temperatures varied but little and the operations were carried out between 1388 and 1390 degrees C. The values which are most interesting and most important for our purpose are contained in the last column of the above tabulation. This shows the consumption of heat in calories per hour. Then, again, the figures in column 4, which show the percentage of inert matter in the gas, are, of course, interesting as well. It is seen at once that there is no definite relationship between the percentage of inert material in the gas and the consumption of heat units per hour. The differences which are noted in the heat consumption per hour amounts to 32 calories at a maximum. There is no more than 1 per cent which is within the realms of experimental error.

It is unfortunate that the gases which were diluted with hydrogen came out to be so high in calorific power, for possibly in this case also, as with the boiling tests, the efficiency rises with falling calorific power. so that the comparison may not be an entirely true one. But the two gases differ in calorific value only by 90 calories per cubic meter and the heat consumption differs by 32 calories. On the other hand, the respective figures for the second hydrogen diluted gas and the first waste gas and water gas sample are 94 and 9. From this fact it might almost be assumed that the difference in the heating values within the forelying limits does not influence the temperature of the flame in any marked degree. It might be said that the statement is correct that flame temperatures of the gases which are tested above may for all practical purposes be assumed to be alike. The loss of heat by convection and radiation at high temperatures are apparently so large that it is possible that the effect which the proportion of inert in the gas may have on the same may be hidden.

Conclusion

In summing up, it is concluded that the results of these experiments have shown that as far as lighting and cooking is concerned the inert materials in the gas act as so much heat consuming ballast. But the writer is of the opinion that the addition of inert matter to gas has not the harmful effect that has been thought to be the case. It is concluded that the harmful effects of such dilution in the practical application of gas as fuel is so slight as to be negligible in comparison with the effects of variation in pressure and in quality of the gaseous fuel. It is his contention that the dilution of gas as it is now going on in Germany is a practice which is satisfactory from all practical considerations and he urges the gas men of Germany to pay more attention to the problem of controlling the calorific power of the gas and of maintaining it constant. He expresses the opinion that a gas which contains from 4200 to 4300 calories per cubic meter, which corresponds to 472 to 483 British Thermal Units per cubic foot is satisfactory for all purposes to which gaseous fuel is put.

(It has been mentioned in the first part of this article that the original article by Dr. Bertelsmann is answered by a Swiss gas engineer who claims that the aforementioned conclusions are not borne out by results from practice in Switzerland. Time is wanting to go into a detailed description of the argument presented in the second article which is answered by Dr. Bertelsmann in a third article. All these articles are found in the Das Gas und Wasserfach, 1924.

In the third article there is also contained the discussion which followed the presentation of this paper. This discussion showed that there is apparently as much divided opinion on this matter in Germany as there is in this country. Of course, the question under discussion was the effect of inert matters on the usefulness of gas, brought about by admixture of high and low calorific gases, while here it is the matter of most advantageous thermal value of a gas for all industrial and domestic purposes. Nevertheless, the two questions are intrinsically alike. They are both live problems in the gas field today.

Attention may be called here again to the recent report issued by a testing laboratory in Detroit as to the effect of lowering the termal value of the gas supplied to the inhabitants of Detroit. The conclusion reached there was similar to that described above, namely, that the lowering of the thermal value had no bad effect on the gas or increased its

2—It requires no special make of pots or pans; the same vessels that are used on an old coal stove may be used on a gas range.

3—It is cheaper than coal because you do not have to maintain the fire a moment longer than is necessary to produce results, and the results are obtained quicker with a gas range than with anything sold for cooking purposes.

4—It is clean; no coal to carry and then spread it in the fire-box; no kindling to provide and no varying heat to exhaust the patience of the cook.

5—Regardless of the condition of the weather, one match and your flame is waiting for you.

6—It insures a neat, clean kitchen and the temperature will only be raised a few degrees above the temperature of the room previous to starting your gas range.

The other hundred reasons are the peace of mind of wife, mother, sister—whoever the cook may be—and, surely, a satisfied cook is more inclined to go to great lengths in preparing special dishes than one who is tortured with an unserviceable cooking apparatus.

Suggestions to Attract Customers

Newspaper advertising is the best medium to reach the largest number, and when you acquaint people of what you have to sell be sure that your store has an attractive appearance, both in the show window and the interior of your establishment, and then show some enthusiasm in your sales talk. Unless you are enthused yourself you cannot enthuse the buyer, and you can only become enthused by studying and knowing your goods. For Knowledge is Power, and a good sales clerk has the power to sell where a poor salesman will fail.

Use the suggestions given as reasons for the superiority of the gas range, and keep eternally at it. Opinions differ as to color, shape and arrangement of various ranges and if the customer will not be satisfied unless his or her hobby is catered to, show it, if you have it, and, if not, tell the truth but never knock the other fellow for, after all a first-class gas range is beyond the pale of any "knock."

Work every day with the understanding that it can be done Cheaper Better and Quicker with gas, and tell it to the whole town, all of which means advertise in your newspaper and prove it when the customers call.

Every gas appliance the gas company retails can be made the basis of advertisement. In fact, a thousand advertisements could be constructed, yet the work would not be started. We can always discuss an article or service from a new and interesting angle; there need be no occasion for a let-down because of lack of a suitable topic. In the matter of gas ovens, for example, we need not confine our efforts only to the mechanical end of this merchandise. By all means, tell the prospect all there is to know about your gas ovens, point out just wherein they excel and how these will prove a worthy buy.

We can, instead, go on and show how the woman is enabled to bake breads and cakes because of the reliable gas oven, in addition to preparing all the other foods in desirable ways. Consider how many women—ever on the lookout for economy—could be interested in gas ovens by means of newspaper advertising, resulting finally in purchase, by telling them how they can save money by baking their breads and cakes themselves.

Following Up Installation

But the work should not cease here. What is to be done once the customer possesses a gas oven? Would it not prove advantageous for all concerned if some representative, perhaps a sympathetic woman, calls to learn just how the new customer progresses? And, when that customer experiences difficulties, these could easily enough be righted by the representative, thus inspiring confidence in the gas company and also in its products. Let the prospect know that you are ready to help her here to the fullest extent possible.

And when she buys a gas oven, is pleased with its use and the gas company's willingness to serve, then, very likely, she will be impelled to inquire regarding other gas appliances. The same policy should then be followed.

How many women today are without a gas heater because they do not know anything about them? And what could the timely newspaper advertisement accomplish here? Golden opportunities certainly await the gas company! Many women are naturally hesitant in buying a gas heater, simply because they are doubtful of results. Newspaper advertisements could eradicate every possible uncertainty. Let the prospect know that she will procure the right article and with it everlasting good service.

ADVERTISING SUGGESTIONS ON SELLING GAS APPLIANCES

(Continued from page 252)

sales tactics are not always employed. We can well ponder the gas company's disadvantage here when it is remembered that not too many people are fortunate enough to witness the gas company's window display demonstrations, and that very few prospects can be reached by way of its offices compared with the possibilities represented by newspaper advertisements.

THE KINETIC THEORY OF GASES

This is the title of a book originally written in French by Eugene Bloch, translated into English by P. A. Smith and published by E. P. Dutton & Co., New York.The book contains comprehensive study of the gas laws as far as they apply to the Kinetic Theory of Gases. The understanding of these laws is of considerable importance to everyone who deals with gaseous products and their manufacture. The book contains numerous formulae and mathematical data, as well as a complete bibliography and numerical tables.

Current Market Prices

COALS (By Courtesy of Coal Age)

A. Bituminous.

(Spot prices, F. O. B. mines, net tons)

	Market	Price
High Volatile, Eastern		
Pool 54-64 (Gas Standard)	New York	$1.40 to $1.65
Pittsburgh screened gas	Pittsburgh	2.30 to 2.50
Pittsburgh gas, mine run	Pittsburgh	1.75 to 2.10
Kanawha lump	Columbus	2.00 to 2.25
Kanawha mine run	Columbus	1.40 to 1.60
West Virginia lump	Cincinnati	1.85 to 2.25
W. Virginia gas, mine run	Cincinnati	1.25 to 1.50
Midwest		
Indiana 4th vein lump	Chicago	2.75 to 3.00
Indiana 4th vein mine run	Chicago	2.25 to 2.50
South and Southwest		
Big Seam lump	Birmingham	2.50 to 3.00
Big Seam mine run	Birmingham	1.50 to 2.00
Southeast Kentucky lump	Louisville	2.00 to 2.50
Southeast Kentucky mine run	Louisville	1.25 to 1.50

B. Anthracite

(Spot prices, F. O. B. mines, gross tons)

Market	Freight Rates	Independent	Company
Egg New York	$2.34	$8.25 to $8.75	$8.75 to $9.25
Egg Philadelphia	2.39	8.65 to 9.15	8.80 to 9.25
Egg Chicago (net tons)	5.06	8.17 to 8.40	8.08

COKE (By Courtesy of Iron Trade Review)

Connellsville, furnace	$3.40 to $4.25
Wise County, furnace	4.00 to 4.25
Alabama, furnace	4.00 to 4.50
Foundry, Newark, N. J., del.	10.41
Foundry, Chicago, ovens	10.75
Foundry, Boston, delivered	11.50
Foundry, St. Louis	11.00
Foundry, Granite City, Ill.	9.00
Foundry, Alabama	5.00 to 5.50

PETROLEUM

(By Courtesy of Oil, Paint and Drug Reporter)

(Prices at wells, per bbl.)

Pennsylvania—Ohio—West Virginia	
Cabell, West Virginia	2.30
Corning, Ohio	2.25
Lima	2.33
Pennsylvania	$3.75 to 3.85
Wooster, Ohio	2.25
Indiana—Illinois	
Illinois	2.12
Indiana	2.13
Oklahoma—Kansas	
Mid-continent (low gravity)	1.35
Gulf Coast	
Gulf Coast, Grade A	2.00
Gulf Coast, Grade B	1.75

GAS OILS

Gas Oil, Bayonne, bulk, gal.	6¼c
Gas Oil (32-36), Oklahoma, gal.	3¾ to 3⅞c
Gas Oil (32-36), Gulf Coast, gal.	3¾ to 4 c

PIPE AND FITTINGS—CAReview)

(By Courtesy Iron Trade ST IRON GAS PIPE

Four-inch, Chicago	$57.20 to $59.20
Six-inch and over, Chicago	53.20 to 55.20
Four-inch, Birmingham	49.00 to 49.50
Six-inch and over, Birmingham	45.00 to 45.50
Four-inch, New York	64.50 to 65.50
Six-inch and over, New York	59.50 to 60.50
Standard fittings, Birmingham, base	115.00

6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20.

BY-PRODUCTS

(By Courtesy of Oil, Paint and Drug Reporter)

Ammonia aqua, 16 deg. drums, lb.	5 to 5¼c
Ammonia aqua, 20 deg. drums, lb.	6¼ to 6½c
Ammonia aqua, 26 deg. drums, lb.	6½ to 6¾c
Ammonia aqua, anhydrous cylinder, lb.	30 to 36 c
Ammonium sulphate, bulk, delivered Northern markets, per 100 lbs.	$2.95 to $3.00
Ammonia sulphate, bulk, delivered Southern markets	3.00 to 3.15
Potash Prussiate, yellow casks	18½c
Potash Prussiate, red casks, lb.	37 to 37½c
Soda Prussiate, yellow casks	10¾ to 11 c
Soda Sulphocyanide, barrels, lb.	45 to 55 c

COAL TAR BASIC PRODUCTS

(By Courtesy of Oil, Paint and Drug Peporter)

Benzol C. P. tanks, works, gal.	24c
Benzol, drums, gal.	29c
Benzol, 90% tanks, works, gal.	22c
Benzol, 90% drums, gal.	27c
Naphthalene, flake, barrels, lb.	5½ to 6 c
Naphthalene, dyestuff bags, lb.	5 to 5½c
Solvent Naphtha, water white, works, gal.	24 to 25c
Solvent Naphtha, drums, works, gal.	30c
Toluene, C. P. tanks, works, gal.	26c
Toluene, C. P. drums, works, gal.	31c

Coal

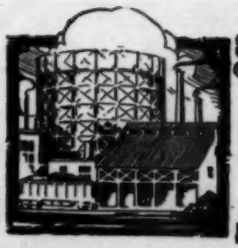
Production of bituminous coal ceased its steady decline during the week ended March 7, when, according to the Geological Survey, output was estimated at 9,394,000 net tons. This compares with 8,855,000 tons in the preceding week, as shown by revised figures. Anthracite output in the week ended March 7, was 1,655,000 net tons, compared with 1,605,000 tons the week before.

Petroleum

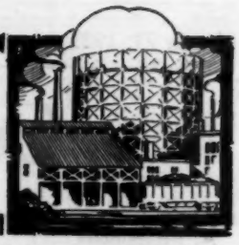
The American Petroleum Institute estimates that the daily average production in the United States for the week was 1,944,450 barrels, as compared with 1,943,750 barrels for the preceding week. The daily average production east of California was 1,341,450 barrels, as compared with 1,341,750 barrels, a decrease of 300 barrels.

Gas Oil

Gas oil was quiet and unchanged at 6¾c per gallon, bulk Bayonne, for 28 degrees or better. Fuel and gas oils were easier at the refineries for the week. The Bureau of Mines of the Department of the Interior, in its report covering January refinery operations, records production of 1,171,000,000 gallons of gas and fuel oils for the month, a daily average of 37,800,000 gallons.



NEWS OF THE GAS INDUSTRY



Utility Bond Issue Closes a Merger

Giving effect to another merger in the public utility industry which is expected to result in operating economies and more efficient service, a new issue of bonds has been floated for the National Public Service Corporation. This corporation has been organized to own the entire capital stocks of the Jersey Central Power and Light Company, the Keystone Public Service Corporation, the Florida Power Corporation and the Kennett Gas Company and to own all but 10 per cent of the common stock of the Tidewater Power Corporation.

The obligations to be taken up consist of the Jersey Central Power and Light Corporation's first lien Series A and B bonds, 6½ per cent, to be redeemed at 110 on May 1; the 6½ per cent notes maturing December 1, 1926, which will be called for payment at 101 on the same date; the 6½ per cent secured notes, to be paid at 101 on June 1; the 7 per cent convertible debentures, to be called at 105 on May 1, and the Coast Gas Company first mortgage 5s of 1951, which will be called at 105 for payment on August 1.

One year ago, when the consolidation movement was started, the Jersey Central Power and Light Corporation was composed of seven different operating units. Since then it has taken in the Coast Gas Company, the City Gas Light Company, the Lakewood Gas Company, the Shore Gas Company, the Kennett Gas Company, and is now acquiring the Keystone Public Service Corporation, the Florida Power Corporation, the Monmouth Lighting Company and the Shore Lighting Company. The reproduction cost of these units forming the structure of the new National Public Service Corporation is $45,603,433, to which is added the investment of the corporation in the Tidewater Power Company, which is carried at $704,100.

Contracts Awarded

The Cambridge Gas Light Company of Cambridge, Mass., have placed order with the Gas Machinery Company of Cleveland, O., for four bench fillings for 20 ft. through benches of eights.

These bench fillings will be installed in the plant of the Cambridge Gas Light Company, Cambridge, Mass., and are duplicates of the bench fillings formerly furnished to this plant by the Gas Machinery Company.

The Southern Indiana Gas & Electric Company of Evansville, Ind., have placed contract with the Gas Machinery Company of Cleveland, O., for a new 10 ft. carburetted water gas apparatus.

This equipment is to be complete with air and steam meters, safety explosion check valve and automatic control.

This equipment will be located in a new building arranged to take care of the growing needs of the gas company.

H. L. Nickerson Joins Brooklyn Union Company

The Brooklyn Union Gas Company takes pleasure in announcing that it has engaged the services of H. L. Nickerson of Boston. His activities will be mainly devoted to production.

Mr. Nickerson is now engineer of manufacture for the Boston Consolidated Gas Company.

He is a native of Quincy, Illinois. He graduated from Yale University in 1905, after which he spent one year specializing in chemistry at the Massachusetts Institute of Technology. Then he spent a year with the Peoples Gas Company of Chicago, after which he went to Boston. He has been employed ever since by the Boston Consolidated Gas Company, except for a few years, during which he was connected with the New England Gas & Coke Company in various capacities.

American Gas to Merge with U. G. I. Co.

Confirming reports that the United Gas Improvement Company had made an offer for stock of the American Gas Company, Samuel Bodine, president of the U. G. I., and Morris W. Stroud, president of American Gas, made public a joint statement from Philadelphia giving the details of the big merger. The statement said in part:

"The board of directors of U. G. I. and American Gas Company have agreed to recommend to their stockholders a plan for the acquiring by U. G. I. Company of at least 75 per cent of the capital stock of American Gas.

"The plan contemplates that American Gas Company will declare a stock dividend of 22½ per cent, which will restore to stockholders dividends deferred during the war period, and the stockholders of American Gas will thereafter be offered the right to exchange their stock, one share $100 par for two shares of $50 par stock in a Pennsylvania corporation of suitable name with corporate powers sufficient to hold such stock.

"It is then proposed that this Pennsylvania corporation be merged under the laws of Pennsylvania with the United Gas Im-

provement Company on a basis of one share United Gas Improvement stock for one share of such corporation's stock. * * * It is proposed that prior to the merger a 3 per cent extra dividend shall be paid on the outstanding common stock of the U. G. I. Company and that after the payment of said extra dividend and prior to the merger both the common and preferred stockholders of the U. G. I. shall be given the right to subscribe to the extent of 10 per cent of their holdings to new common stock of the U. G. I. Company at $50 a share. The proceeds will be used in part to retire the outstanding preferred stock of the U. G. I. Company at its redemption price of $55 a share."

The United Gas Improvement Company and subsidiaries have total assets of more than $122,000,000. The American Gas Company and its subsidiaries have assets of approximately $70,000,000. The merger will make United Gas Improvement one of the largest utility holding companies in the country.

Dr. Henry A. Jordan Passes Away

The passing of Dr. Henry A. Jordan was heard with the keenest regret. Dr. Jordan was one of the outstanding figures of Bridgeton, which has lost a very substantial citizen.

Dr. Jordan was the son of Mr. and Mrs. Robert W. Jordan and was born in Bridgeton in September, 1845. As a lad he attended the Bridgeton schools and from there he went to the College of Pharmacy in Philadelphia. After graduating he returned to Bridgeton and entered the drug store of Edward Kennedy as clerk and continued there until the death of Mr. Kennedy, at which time he purchased the store. Dr. Jordan was one of the pioneer merchants of the city, as there is but one business now functioning which preceded his in establishment.

Dr. Jordan was a director of the Bridgeton Gas Light Company. Recently he celebrated his 50th anniversary of his membership in the Bridgeton Lodge of Odd Fellows.

Penna. Gas Association to Meet with Eastern States Gas Conference

The Pennsylvania Gas Association will meet in conjunction with the Eastern States Gas Conference in the Robert Treat Hotel, Newark, N. J., on Wednesday and Thursday, April 22-23, 1925. A comprehensive program both of a business and social nature, has been prepared.

P. F. McEnaney Now With Penna. Engineering Works

Mr. P. F. McEnaney has resigned from the gas engineering staff of the Electric Bond & Share Company, to take up the duties of Eastern representative of the Pennsylvania Engineering Works in association with Mr. W. S. Guitteau.

Mr. McEnaney is a thoroughly trained and experienced gas engineer and has a very liberal and wide training in the gas industry. Through his knowledge and experience the Pennsylvania Engineering Works will be better able to serve the public utility field.

The Pennsylvania Engineering Works have recently moved the New York office to larger quarters at 55 William street, New York City.

N. Westchester Light Co. Rates Approved

Albany, N. Y.—The Public Service Commission has approved rates of the Northern Westchester Lighting Co. for gas service supplied in the villages of Briarcliff Manor, Sooining and Pleasantville and towns of Mount Pleasant and Ossining, N. Y. Rates as follows, for use of service for light, heat or power, made effective March 8, 1925, under authority of order of the Commission dated February 26, 1925, in case No. 1517: First 100 cu. ft., 75 cents; next 100,000 cu. ft., $2 per thousand cu. ft.; next 200,000 cu. ft., $1.95 per thousand cu. ft.; next 300,000 cu. ft., per month, $1.90 per thousand cu. ft. Rates heretofore in effect: First 100 cu. ft., 75 cents; next 100,000 cu. ft., $1.60 per thousand cu. ft.; next 200,000 cu. ft., $1.55 per thousand cu ft.; next 300,000 cu. ft, $1.50 per thousand cu. ft.

New Rates for Peekskill Lighting & Railroad Company

Albany, N. Y.—The Public Service Commission has approved new rates of the Peekskill Lighting & Railroad Company for gas service supplied in the village of Peekskill, N. Y. Rates are as follows, for use of service for light, heat or power, made effective March 1, 1925, under authority of an order of the Commission dated February 20, 1925, in Case No. 6701: First 100 cu. ft., 75c; next 100,000 cu. ft. $1.80 per M. cu. ft.; next 200,000 cu. ft., $1.75 per M. cu. ft.; next 300,000 cu. ft. per month, $1.70 per M. cu. ft. Increase of 15c per M. cu. ft. for all consumption in excess of first 100 cu. ft.

Oklahoma Gas & Electric Company Issues a Bulletin

The bulletin recently issued by the Oklahoma Gas & Electric Company is descriptive of the work of this company in the Oklahoma district. It is filled with interesting illustrations and shows clearly that this has played an intrical part in developing the state of Oklahoma. Incidentally, it is remarked in the bulletin that this company has a very large distribution of stockholders among the people that use its service. This is a direct result of the adoption of the customer ownership policy in 1917.

Macon Gas Co. Reduces Industrial Rates

Macon, Ga.—A voluntary reduction in gas rates has just been made by the Macon Gas Company in a new rate schedule filed with the Public Service Commission of Georgia. The reduction is made to wholesale and industrial customers and in some instances amounts to as much as 50 per cent.

Under the new schedule, the consumer using 10,000 cubic feet of gas will pay a rate of $1.50 per thousand cubic feet, instead of $1.65. For the next 10,000 cubic feet the rate is to be $1.25, instead of $1.55. For the third 10,000 cubic feet the new rate is $1, instead of $1.55, and for the next 20,000 cubic feet the rate will be

70 cents, instead of $1.40—a reduction of 50 per cent in rates.

All consumers using 50,000 cubic feet and over will receive gas at the rate of 50 cents, instead of $1.40 per thousand cubic feet—a rate which is expected to prove very attractive to Macon industrial firms.

In addition to the new gas rate, there will be a service charge of $4.50 for the first 100 cubic feet per hour of demand, and $3.50 for each additional 100 cubic feet per hour of demand. The adoption of the new rate, with its service charge, is made optional with consumers.

Contracts Awarded

Walter A. Allison, consulting engineer, of Philadelphia, Pa., has been retained by the Westerly Light & Power Company, Westerly, R. I., to supervise improvements and additions to their gas plant. The work contemplated consists of new water gas apparatus, purifiers, relief holder, elevator, steam plant and piping.

Year Book of the Baltimore Consolidated

The Consolidated Gas, Electric Light & Power Company of Baltimore has just issued its year book. We wish to take this opportunity of congratulating the company on the fine manner in which this book has been prepared. An interesting feature of the book is a separate detachable financial report.

The book contains a detailed account of the growth of the company and of the various aspects of its service to the people of Baltimore.

A portion of the book is devoted to the use of gas in industries in Baltimore and environs. A very diversified clientele is enjoyed by the company along these lines, including operations from the manufacture of fruit products of all kinds to aluminum smelting, manufacture of moving picture supplies and the like. It is shown that the hourly consumption load in cubic feet used by the industries of Baltimore amounts to 1,242,477.

Rates of Penna. Gas Co.

Albany, N. Y.—The Public Service Commission has approved new rates of the Pennsylvania Gas Company for gas service supplied in the city of Jamestown, village of Falconer and town of Ellicott, N. Y. The rate for natural gas for cooking, baking and heating water, for domestic purposes, increased from 50c to 75c per thousand cu. ft. Effective February 26, 1925.

Public Service of N. J. Declares Dividend

The directors of the Public Service Corporation of New Jersey have (March 3) declared a quarterly dividend of $1.25 a share on the non par value common stock and the usual quarterly dividends of $1.75 and $2 a share, respectively, on the 7 per cent and 8 per cent cumulative preferred stock of the corporation. Dividends will be payable March 31 to stockholders of record at the close of business March 13.

Gas Industry to Have Interesting Show Display

28 Booths Have Been Provided to Show How It Has Aided Housekeeper

The importance of gas as a utility in the construction and furnishing of the modern home will be demonstrated in the gas division of the seventh annual "Own Your Home" Exposition, which will be held in the Sixty-ninth Regiment Armory, April 18 to 25. The exposition is under the auspices of the Real Estate Boards of the Metropolitan district.

A gas appliance committee, headed by William M. Crane, chairman board of directors, Standard Gas Equipment Company, is supervising the gas division, where the progress of this industry during the last year will be shown in spectacular and educational displays. Some entirely new plans for presenting the latest improvements in gas consuming units, especially featuring house-heating equipment, have been made by this committee.

Twenty-eight exhibit spaces have been set aside for the gas industry, 18 have already been taken and six are under reservation.

Additional contracts have been awarded the U. G. I. Contracting Company to install a pumping system of sufficient capacity to handle the hydraulic system of three 11 ft. carburetted water gas sets and two 10 ft. 6 in. sets. With this hydraulic system and with the U. G. I. master valve nests, all of these sets will be operated hydraulically, instead of by hand, as at present.

The U. G. I. Contracting Company, Philadelphia, has received a contract to furnish and install electric vibrating screens in connection with the new carbonizing plant of the Syracuse Lighting Company at Syracuse, N. Y. By means of these screens the coke will receive a screening treatment that could not be effected by the ordinary screen processes, and it will enable the Syracuse Lighting Company to deliver to its customers cleaner and more satisfactory domestic fuel than would otherwise be the case.

C. M. Crawford Joins So. Gas & Power Co.

C. M. Crawford, formerly with the Greensboro, N. C., Gas Co., has been appointed general manager of the Southern Gas & Power Company's Southern properties, which include the Gas Light Company of Augusta, Ga., the Concord and Kannapolis Gas Company, Concord, N. C., and the Gastonia Public Service Company, Gastonia, N. C. It is understood that Mr. Crawford will have headquarters at Charlotte, N. C.